Demand Chain Management Model: A Tool for Stakeholders’ Value Creation
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ABSTRACT
The recent pressure on organisations to maximise shareholders value through demand chain management has brought about many arguments as there are different consensuses on what supply chain management and demand chain management are. This study aims to augment the existing knowledge of demand chain management concept and how it can be used to maximise stakeholders’ value. The study examines demand chain management through comprehensive literature review on the various definitions of demand chain management, the difference between demand chain management and how they can be integrated to achieve stakeholders’ value. It also reviews literature on evidence of demand chain management in practice. Based on the literature review a model of demand chain management is developed. The study suggests finding the balance between supply chain and demand chain in order to maximise customer value hence shareholders value.

1. Introduction
In today’s competitive and volatile market, organisations that link their customers and suppliers together are suggested to be the most revered and frightened competitors (Frohlich and Westbrook, 2002). Walters (2008) for instance, advocated that supply chain coordination without understanding of demand process is woefully inadequate in achieving stakeholders’ value. This suggests why the integration of the supply and demand chain is necessary in every organisation. Integration and coordinating firm’s activities as a linked chain is suggested to be a tried and tested way of illuminating value creation opportunities (Christopher, 2005). Porter (1985) initiated the value chain approach shown in figure 1, to indicate that, the value chain separates an organisation into its significant strategic units so as to appreciate the costs and possible sources of differentiation. Organizations are therefore advised to use its micro structures to align upstream (Supply) and downstream (Demand) at the macro market level. The joint application of the upstream of the chain made up of distribution, manufacturing and purchasing in the early 1980s, led to a concept known as Supply Chain (SC) (Ericsson, 2011). The downstream of the chain made up of marketing, sales and service which is believed to collectively drive and sustain demand has also come to be known as the Demand Chain (DC). Progress in transforming supply chain in business and academic literature has far advanced than demand chain; nevertheless demand chain has received a significant interest in business and academic literature recently (Lorentz and Ghauri, 2010)

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The recent interest of attaining shareholders value through demand chain management has brought about many arguments as there are different consensuses on what Supply Chain Management (SCM) and Demand Chain Management (DCM) really are, how the concepts should be implemented and where their control should be reached. Some are of the view that there is a thin line between the two concepts (Hillietoft et al., 2009) while others believe DCM can be termed as SCM (Treville et al., 2004). Stock (2009) took advantage of the situation to admonish researchers and professionals to arrive at a consensus on the definition of SCM so that “the discipline may move forward with the development of SCM theories and sub-theories” (p.148). This study therefore seeks to determine how shareholders value can be attained by developing a demand chain management model through literature review on:

1. Diverse definitions of Demand and Supply Chain management;
2. The differences between supply and demand chain management as expressed in literature;
3. How the supply and demand chain can be integrated to achieve stakeholders value;
4. The evidence of DCM in practice;

2. Literature Review

2.1 Introduction

Many organizations, both service and manufacturing, have placed emphasis on the search for competitive strategies that maximises shareholders and customers value (Christopher, 2005). Porter (1985) indicated that “competitive advantage cannot be understood by looking at a firm as a whole; it stems from the many discrete activities a firm performs in designing, producing, marketing, delivering, and supporting its product. Each of these activities can contribute to a firm’s relative cost position and create a basis of differentiation....... The value chain disaggregates a firm into its strategic relevant activities in order to understand the behavior of cost and the existing and potential sources of differentiation. A firm gains competitive advantage by performing these strategically important activities more cheaply or better than its competitors” (p.33).

The authors believe that Porter was advocating for the attainment of stakeholders (Shareholders, customers and the society) value through the principles of demand and supply chain management and for that matter should be credited with both concepts even though he failed to explain or mention them as they are called today. This can be attributed to the limitations of academic writing or the focus of subject matter at the time his writing.

Christopher (2011) categorized value chain activities (shown in figure 2) into two types. These were "primary activities (inbound logistics, operations, outbound logistics, marketing and sales and service) and support activities (Infrastructure, human resources, technology development and procurement). Some authors believe procurement activity is a primary activity but not supporting activity Christopher suggested (Lambert and Cooper, 2000).
The author believes the upstream of the value chain that sees to the movement (push) of goods or service and it’s accompanying within the organisation to its immediate distribution points or retailer is known as supply chain while the movement (pull) at the downstream of the value chain that is from customer to the organisation the demand chain.

2.2 Varied Definitions of supply chain management

Christopher (2011, p.3) defined supply chain as “The management of upstream and downstream relationship with suppliers and customers in order to deliver superior customer value at less cost to the supply chain as a whole”. As Christopher pointed out on the same page, SCM could be argued to mean demand chain management as the chain is driven by the market, not the suppliers. Inferring from the above we can say that the two concepts does not lend itself to easy definition.

The Council of Supply Chain Management Professionals (CSCMP) also defines supply chain management to “encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all Logistics Management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, Supply Chain Management integrates supply and demand management within and across companies.” CSCMP on the other hand, indicated there have been several changes to the definition of SCM to fit the evolution and the growing needs of global supply chain (CSCMP, 2013). With the supply chain containing a wide range of disciplines, the definition of what is a supply chain can be blurred. This study adopts the definition given by Stock and Boyer (2009) as “The management of a network of relationships within a firm and between interdependent organizations and business units consisting of material suppliers, purchasing, production facilities, logistics, marketing, and related systems that facilitate the forward and reverse flow of materials, services, finances and information from the original producer to the final customer with the benefits of adding value, maximizing profitability through efficiencies, and achieving customer satisfaction” (Stock and Boyer 2009, p.706). This definition is adopted for the study because it synthesis a wide range of concepts and recommendations expounded by a variety of practitioners, academic and hybrid sources, and also discusses the achievement of stakeholders value through downstream and upstream integration. However, it is not clear as to whether Stock and Boyer’s definition considers the society within which the organization is situated as part of the stakeholders. The authors believe stakeholders in supply chain and demand chain management must be explained to include the society and not just the focal firm and its customers; hence the essence of corporate social responsibility in today’s organizational settings.
2.3 Varied Definitions of Demand Chain Management (DCM)

DCM is gaining popularity within industries and academics as this can be attributed to the pursuit for competitive advantage through operational efficiencies in an organisation. Similar to SCM, there is lack of consensus as to what the definition of DCM is. It is sometimes referred as “customer driven supply chain”. Vollmann and Cordon (1998) emphasize DCM to begin with the customers, working backward through the whole chain, to the suppliers of the supplier. This was further developed by Selen and Soliman (2002) who defined DCM as “a set of practices aimed at managing and coordinating the whole demand chain, starting from the end customer and working backward to raw material supplier”. What this means is that the ultimate goal of forward and backward flow of product and information with or without its accompanying service is to respond to customer requirement.

Treville et al., (2004) propose narrowing the definition of DCM as they believe supply chain can effectively be replaced by demand chain. Their dogma is believed to have emanated from Fisher’s efficient physical supply and the market mediation roles of supply chains (Fisher, 1997), they further suggested limiting it to “market mediation supply chains”.

Jüttner et al., (2007) disputed Treville et al’s argument, by suggesting that, “in markets where supply chain efficiency is the basis for competitive advantage, demand should always be linked with supply”. They therefore define DCM as “a concept which aims to integrate demand and supply orientated processes. Demand processes are all processes at the customer or market interface, aimed at responding to customer demand through value creation. Traditionally, these processes are allied to the marketing discipline” (Jüttner et al., 2007).

The authors believe this definition does not take into account the support activities in an organisation so a definition that synthesises a wide range of recommendations expounded by a variety of practitioners, academics and hybrid sources, and also discusses the achievement of stakeholders value through downstream and upstream integration can be given as the alignment, coordination and management of the entire business process and activities in order to maximise shareholders value through the maximisation of customer and societal values. Table 1 below shows the gaps identified in the various definition given by different authors.

**Table 1:** Gap Analysis of various DCM definitions

<table>
<thead>
<tr>
<th>Sources</th>
<th>Definition</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brace (1989)</td>
<td>“...the whole manufacturing and distribution proceed may be seen as a sequence of events with but one end in view: it exists to serve the ultimate customer”</td>
<td>No shareholders value, no integration and no demand management,</td>
</tr>
<tr>
<td>Vollmann and Cordon</td>
<td>“is to create synergy with the chain acting as a “virtual enterprise”, achieving the benefit of vertical integration without cost</td>
<td>One sided integration, no Demand management, no customer value, less possible cost not without cost</td>
</tr>
<tr>
<td>Selen and Soliman</td>
<td>as “a set of practices aimed at managing and coordinating the whole demand chain, starting from the end customer and working backward to raw material supplier”</td>
<td>No integration</td>
</tr>
<tr>
<td>Jüttner (2007)</td>
<td>as “a concept which aims to integrate demand and supply orientated processes. Demand processes are all processes at the customer or market interface, aimed at responding to customer demand through value creation</td>
<td>Marketing oriented and no management of the chain after integration</td>
</tr>
</tbody>
</table>

**Sources:** Authors’ work
2.4 The difference between supply chain and demand chain management

The differences between the two concepts from the literature explained and presented in Table 2 and below. Some authors believe there is a thin line between demand and supply chain when considering value chain (from customers to suppliers) in an organisation. However, there is a significant difference in the processes, objectives, design and use (Hiltefoil et al., 2009). For instance, where supply chain seeks to improve the logistics tied to conception, production or distribution of products services or ideas, demand chain tries to improve visibility of customer demands (Christopher, 2011).

The SC consists of all the supply processes essential for fulfilling customer demand (Gibson et al., 2005) while DC on the other hand encompasses all the demand processes required to identify, create, and stimulate customer demand (Charlebois, 2008).

Godsell et al. (2006) submitted that demand chain processes predominantly marketing, define and create demand whilst supply chain capabilities sustain the demand created. SC and DC can therefore be understood as different perspectives on the same chain in a company (Jacobs, 2006).

SC tries to optimize processes by pushing management data out to internal and external customers whereas DC pulls customer and its accompanying demand data. The supply chain depends largely on command and control to “optimize” processes, whereas the demand chain on the other hand tries to develop organizational trust by ensuring the quality and pertinence of customer information (Gibson et al., 2005) SCM can be attributed to the management of activities such as strategic sourcing, inventory and collaborative planning, forecasting and replenishment (CPFR) (Jüttner et al., 2007). DCM on the contrary can be attributed to customer need identification, value propositions development, customer relationships management (CRM), demand creation and brand development. CRM particularly, facilitate the capturing of market intelligence which enables organisations to segment the customer base, customize the value offering and coordinate demand chain (Zablah et al., 2004).

The difference between these two business models also lies in the choice of emphasis and their applicability depending on the market characteristics (Christopher et al., 2006) and the company's competitive strategy (Hiltefoil and Hilmola, 2008). For instance, instead of delaying product differentiation in the production cycle from supply chain perspective, DC focuses on customer demand by providing a collaborative mechanism.

Table: 2: Comparisons between Demand and Supply Chain

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Supply chain</th>
<th>Demand Chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus on design</td>
<td>Differed product differentiation</td>
<td>Collaborative filtering</td>
</tr>
<tr>
<td>Focus on optimization</td>
<td>Stock(product, service and idea)</td>
<td>Customer demand</td>
</tr>
<tr>
<td>Customer orientation</td>
<td>Satisfy every order, every day at the lowest cost</td>
<td>Attract and retain the most Profitable customer</td>
</tr>
<tr>
<td>Data requirement</td>
<td>Extract meaning past</td>
<td>Real time data</td>
</tr>
<tr>
<td>Defining characteristics</td>
<td>Reliability</td>
<td>Agility</td>
</tr>
<tr>
<td>Process regulated</td>
<td>Control mechanism</td>
<td>Trust Mechanism</td>
</tr>
<tr>
<td>Output Positioning</td>
<td>End of process</td>
<td>Throughout the process</td>
</tr>
<tr>
<td>Information Flow</td>
<td>Push data management</td>
<td>Pull data management</td>
</tr>
<tr>
<td>End to end commitment</td>
<td>Process vs. function source</td>
<td>More process managed largely through functions/channels aligned to consumer real need</td>
</tr>
<tr>
<td>Waste</td>
<td>All time or cost that does not directly touch product or satisfy goal</td>
<td>Any deviation from brand experience</td>
</tr>
</tbody>
</table>

Source: Authors’ work
2.5 The Integration of Supply chain management and Demand chain management
Lack of integration and management imbalances of the two models may result in high operational cost as well as lack of responsiveness and inefficient product delivery (Walters, 2008). Jüttner et al. (2004) suggested integration of demand and supply chain processes in achieving customer value. The integration of the two processes is believed to provide the organisation with opportunity to attain a complete value along the chain.

All the benefits such as cost reduction, efficient material and information movement and new product development (NPD), product differentiation, effective product delivery emanating from supply and demand chain respectively can be derived if an organisation decides to integrate the two processes (Piery, 2002). It can therefore be suggested that firms exist to achieve shareholders value and they can only do so by achieving customers’ value through the integration and coordination of the two processes (Jüttner et al., 2007; Lee, 2001; Sheth et al., 2000).

The satisfaction of customers’ needs and wants therefore becomes the prime goal of the organisation and this can be effectively achieved if the right information is captured along the chain (Costello, 2001). Information sharing therefore becomes the pillar of supply and demand chain integration.

Christopher (2011) suggested balancing supply and demand through the use of various management tools and procedures in managing market volatility. He proposed the use of sales and operations planning (S&OP) process shown in figure 3 as a means of achieving "the highest level of customer satisfaction through on-time-in full delivery with a minimum inventory.

**Figure 3:** Sales and operation planning process

Source: Adapted from Christopher, 2011

This study therefore proposes integration and coordination of supply and demand processes starting backwards through to the entire value chain in achieving stakeholder’s value. However CRM, supply relationship management (SRM) and Information flow and sharing, is believed to be of paramount to the integration processes. That is finding the balance between good customer satisfaction and supply chain efficiency is recommended.

2.6 Demand Chain in Practice
Demand chain management has been in practice since World War II, however the use of nomenclature has made it seem, the concept recently originated. It can even be traced towards the bullwhip effect by Forrester in 1961. Even though the concept has been in practice for that long few records can be traced about its application in the world. A documented finding of a study conducted by Heikkila (2002), about demand chain management in practice on Nokia is used for the study. The inductive study consisted of six customers of Nokia network made up of Alpha, Beta, Delta, Theta, Gama and Epsilon. The study sought to increase the understanding of factors that contribute to a well performing demand chain in the mobile cellular network industry.

2.6.1 Correlation between customer-supplier relationship and demand chain efficiency
Heikkila (2002) used cross-case analyses to evaluate the collected data, and organized the result according to the background of customer supplier relationship he studied, demand chain structure, customer-supplier relationship and demand chain performance. He summarized his findings in a demand chain model presented in figure 4 and the bullet point below:
Good cooperation reduced inventory for subsequent demand chain efficiency improvement and good customer satisfaction.

- Efficiency in demand chain management increases when there is maturity and growth stability in network building.
- Trust and high information sharing provide good working environment and an improve demand chain performance.
- High quality information sharing even though does not guarantee high demand chain efficiency is necessary in an organisation.
- Good trust between the supplier and the customer is related to good demand chain efficiency.
- Changing orders, order batching, delay in ordering information, multi-step forecasting and constant over forecasting may lead to low efficiency in demand chain.

**Figure 4:** The model of demand chain management

![Demand Chain Management Model](https://example.com/demand-chain-model.png)

**Source:** Heikkila (2002)

### 3.0 Methodology

Very few studies have been conducted from theory building perspective in supply chain management (Carter and Ellram, 2003) albeit the frequent calls for theory building in supply chain management (Kent and Flint, 1997; Melynk and Handfield, 1998). Few of such research have employed qualitative approaches grounded on interpretive techniques such as grounded theory approach (Flint et al., 2005; Svensson, 2000). Nevertheless; an interpretive study that uses interviews and observations is suggested to constitute a marginal proportion of theory building techniques appropriate for supply chain management research (Elsbach et al., 1999; Weick, 1999).

It is suggested by Meredith (1993.p7) that, a balance can be created involving the findings of inductive and deductive research which may guide and lead practitioners and academicians through a conceptual theory-building. This study is therefore based on a collection of two or more interconnected findings from various authors in the area of demand chain management through a structured literature review approach.

The structured review process has been described as: “the selection of available documents (both published and unpublished) on a topic, which contain information, ideas, data and evidence written from a particular standpoint to fulfill certain aims or express certain views on the nature of the topic and how it is to be investigated, and the effective evaluation of theses document in relation to the research criteria being proposed base on a predetermine criteria” (Hart 1998, p. 13)
Related articles selected were studied in depth and width at the initial stage of the review which aided the development of keywords for subsequent search for quality articles from selected academic search engines (databases) such as ABI/Proquest and EBSCO. ABI/Proquest and EBSCO were chosen because; they provide reasonably high credible and quantity information, full-text availability, links to the abstracts of the targeted articles and conventional functions for the structured searching.

Cross referencing was used but then most of the papers were noted to have already been selected except 2 articles. Google scholar was also used to generate 3 related articles. A final of twenty eight articles are relevant survived as the resources for this literature review after all the selection criteria were applied. The conceptualization as explained overhead involved many hours of reading and synthesis selected quality literature from selected academic search engines (databases), as well as consistent modification of our model thru consultations with associates.

4. Model Development

4.1 Introduction
Based on the literature reviewed; information sharing, business processes and activities integration, coordination and management were noted to be the cornerstone of demand chain management hence stakeholder’s value maximisation. The findings are summarized below and presented in the demand chain management model shown in figure 4.

4.2 Findings and model prepositions
The findings consist of the following prepositions emerging from the literatures reviewed:

- Managing and coordinating the integrated process between demand and supply is paramount in an organization setting today.
- Information flow and sharing alone is not sufficient for efficiency but good relationships and understanding which contribute to cooperation across the entire value chain.
- Organisations exist to maximise shareholders value and can only do so when customers value is realised. The value realization must not sacrifice that of the society since the absence of the society means the absence of the organization and the customers in general. More so activities of the organization and that of its customer’s impacts hugely on the society (including government and citizenry).
- Organisations can maximise stakeholders value by finding the fair balance between SC and DC through the use of tools such as SRM, CRM, CSR and S&OP

Figure: 5: Demand chain management Model

Source: Authors’ work
The model is believed to have considered almost all the necessary elements needed to maximise stakeholder’s value. It considered the integration and coordination of key supply chain and demand chain activities and processes needed to maximise operational efficiency in achieving high level of customer satisfaction (Rainbird 2004). It further suggests the effects of good relationship, cooperation, information sharing and flow as key elements of the integration process. The model also suggest finding the right balance between the two concepts as a shift in strategic focus may sacrifice the required value needed to be attained even though certain benefits may be achieved.

However, the model does not take into account how these processes and activities can be integrated, coordinated and managed even though it proposes the application of concepts such as SRM, CRM, CSR and S&OP as a way of finding the balance between the two concepts; hence shareholders, society and customers value maximization. Researchers and practitioners who seek to use this model are therefore encouraged to identify how these processes and activities can be integrated, coordinated and managed.

The model is also built on theoretical framework base on literature reviewed even though it takes into account documented evidence in practice. An authentication of the model using simulation and other management science techniques is therefore advised.

Conclusion

The key ingredients to maximise stakeholder’s value in today’s volatile, dynamic and competitive market are integration, coordination and management of supply and demand chain processes and activities ranging from procurement to customer services. Cooperation, trust, information flow and sharing across the value chain should be promoted and achieved to make the maximisation of stakeholder’s value to be realised. The value realization by stakeholders doesn’t have to be equal but sufficient to each partner of the chain. The sufficiency which is termed by the authors as “the balance” can be determined by the level of satisfaction by partners across the chain (win-win).

Achieving the maximum value across the chain through elimination of cost and waste and putting organic growth in an organisation will depend on the ability of the organisation to find the balance between demand chain and supply chain processes and activities across the value chain.

There is a significant difference between DCM and SCM in their processes, objectives, design and use. Researchers and professionals are therefore suggested to arrive at a consensus on the definition of DCM and SCM as well as their differences to move forward the development of the concepts.

References


**Acronyms**

CPFR Collaborative Planning, Forecasting And Replenishment

CRM Customer Relationships Management

CSCMP Council of Supply Chain Management Professionals

DC Demand Chain

DCM Demand Chain Management

NDP New product development

SC Supply Chain

SCM Supply Chain Management

S&OP Sales And Operations Planning

SRM Supplier Relationships Management